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MEMORANDUM

SUBJECT: Final ROD Responses to National Remedy Review Board Recommendations on the Anaconda Smelter Superfund Site

FROM: Julie A. DalSoglio *Julie A. DalSoglio*
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TO: Bruce K. Means, Chair
National Remedy Review Board

Background

As required by the October 1995 Superfund Administrative Reforms to help control remedy costs and promote consistent and cost-effective decisions, the National Remedy Review Board (NRRB) reviewed the site package for the Anaconda Smelter Superfund site. The proposal for final remedial action at the site was to address approximately 15,000 acres of soils contaminated with arsenic and heavy metals from 100 years of smelting, 6000 acres of abandoned mine tailings and smelter wastes, 28,000 acres of arsenic contaminated bedrock aquifers, and 37 river miles along Warm Springs, Willow and Mill Creeks which exceeded ambient water quality standards. The initial estimated cost was approximately \$180 million. The NRRB met with Region 8 representatives on March 19, 1997 and April 24, 1997. The Board generally agreed with the proposal but issued three recommendations for consideration by Region 8 management on June 24, 1997. The Proposed Plan was released in October 1997 and ended January 30, 1998. The final Record of Decision (ROD) was signed September 28, 1998 with revised cost estimated between \$90 to \$165 million.

ROD Responses to NRRB Advisory Recommendations

The NRRB provided three specific recommendations to the initial proposed plan. One recommendation was addressed solely through revised language in the proposed plan and ROD. The other two recommendations were addressed through development of an evaluation system to better focus revegetation remedies across the vast area and to address land use and land

ownership issues. The evaluation system, along with site-specific information received separately from the PRP and the State during the Proposed Plan public comment period, were used to revise cost assumptions in the calculations of cover soil and revegetation alternatives. More detail on the recommendations and responses follows.

1. "The Board recommends that the Region conduct additional analysis of groundwater remedial alternatives when monitoring indicates contamination has migrated beyond either...points of compliance."

The initial proposed plan called for an immediate implementation of groundwater containment systems if monitoring showed migration beyond established points of compliance. At the recommendation of the Board, the revised proposed plan and the ROD allows for a review of the conditions of migration beyond the point of compliance. The specific ROD language states, "If a POC boundary is violated, based on determined statistical analyses, EPA will respond by conducting one or more of the following actions: 1) re-assess containment alternatives for contaminated ground water at the compliance boundary; and 2) complete a TI (*technical impracticability*) evaluation for the aquifer in areas of ground water contamination located outside the compliance boundary." This revised language adds flexibility and does not pre-judge and pre-select a contingency response action. Rather, it allows evaluation of an appropriate response to be done when contaminated ground water moves beyond established compliance points.

2. "Given the large area proposed for remediation and the likelihood that site land uses will continue to be mixed, the Region should tailor remediation driven by ecological endpoints to those areas where the results are reasonably expected to be sustained. The Board recommends that the Region work closely with the state, local community, the PRPs, and other federal agencies in making this determination."

And

3. During remedial design it may be possible to take advantage of existing soil or hydrogeologic characteristics to refine and focus the extent or intensity of remediation work and still achieve the desired remediation endpoints in a reasonable time frame. The Region should continue to examine key areas in more detail to refine the number of acres needing the various levels of remediation to optimize the cost-effectiveness of the revegetation."

To meet the objectives of the recommendations outlined by the NRRB, EPA began design of a pilot study in May 1997 and field tested the approach summer 1997. Existing information on risk assessments, remedial action objectives, and remedial alternatives were reviewed. Field reconnaissance of the plant and soil resources were conducted, and maps were prepared. A decision making mechanism that identified remedial land units was developed. This decision making tool integrated guidance criteria (ARARs, risk based standards), a quantitative scoring system of existing vegetation communities and potential for contaminant movement, and modifying parameters (e.g., watershed boundaries, land ownership, current and end land uses). EPA determined that this approach was useful in better targeting levels of revegetation for site

specific conditions that would meet the risk reduction goals of the proposed plan. The final report, the Stucky Ridge Pilot Project, was included in the final set of Feasibility Study documents in the Administrative Record at the release of the Proposed Plan.

The results of the pilot project were well received by the State of Montana, community representatives, and the PRP. The PRP submitted a conceptual design plan for site-wide revegetation as part of their comments on the Proposed Plan. EPA decided to expand the Stucky Ridge Pilot Project into a site-wide Land Reclamation Evaluation System (LRES) as part of the response to the PRP's comments. Beginning Spring 1998 EPA and the State reviewed the remedial actions presented by the PRP and developed a list of conditions at the site (e.g., steep slopes, low soil pH, etc.) that will require specific reclamation approaches. Based upon these conditions, EPA developed a list of applicable reclamation technologies, and then combined these into 11 reclamation alternatives. EPA and the State developed and field validated the numeric portion of the LRES and made the LRES Work Plan available to the PRP for review. Representatives of the EPA and State worked with the PRP's contractors in the field refining and applying the LRES to specific areas throughout the site. This helped achieve buy-in to the methodology by the PRP.

The information gained from the field application of the LRES, along with updated numbers on certain cost assumptions (e.g., costs of bulk quantities of lime), were used to revise the projected costs for the final ROD. The final costs, estimated to range between \$90 and \$160 million, will continue to be refined throughout the RD/RA work plan development and implementation of the remedy.

The LRES system provides a clear path for integrating critical elements, such as land ownership and current and future land use, into the decision making process for final remedial design. EPA Region VIII is committed to continued communication and input by the State, local government, PRP, and private land owners through use of this system. Furthermore, the physical and chemical parameters of the site are used to determine the most effective and cost efficient level of revegetation for the individually described remedial design units.

EPA Region VIII welcomes further review and input by other Regions on the LRES system.

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